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MAYONNAISE-LIKE FOOD PACKAGED IN A CONTAINER

[Claim 1]

Mayonnaise-like food packaged in a container, characterized in that a defatted egg yolk hydrolysate is contained.

[Claim 2]

Mayonnaise-like food packaged in a container of Claim 1, wherein the container is a flexible container.

[Claim 3]

Mayonnaise-like food packaged in a container of Claim 1 or 2, wherein the egg yolk hydrolysate is an acid hydrolysate or a decomposed substance using both acid and enzyme decomposition.

[Claim 4]

Mayonnaise-like food packaged in a container listed in any of Claims 1 to 3, wherein the content of the defatted egg yolk hydrolysate is 0.01 – 1% by weight per the entire weight of the mayonnaise-like food, in dry matter conversion.

[Detailed Explanation of the Invention]

[0001]

[Technological Field Pertaining to the Invention]

The present invention concerns a mayonnaise-like food packaged in a container, whose flavor immediately after manufacturing can be maintained over a long term.

[0002]

[Prior Art Technology]

Mayonnaise, salad dressing, and the like are representative products of mayonnaise-like foods. However, in recent years, as tastes have diversified, there has been a tendency for a product having a flavor that is thinner and softer than that of the conventional type of product.

[0003]

However, normally, mayonnaise-like foods packed in a container are distributed at room temperature, and when a mayonnaise-like food packed in a container having this type of flavor is distributed at room temperature, deterioration of the flavor can be easily felt compared to conventional products; therefore, short freshness date expiration times had to be set. Based on the progress in recent years of filling technology and the like, a method of replacing head space with nitrogen to prevent flavor deterioration has been adopted, and like before, a mayonnaise-like food packed in a container having excellent flavor stability was not obtained. However, in order gradually to advance the flavor deterioration, it has been desirable to maintain a more preferable flavor over a long term. In particular, with the flavor deterioration, the tendency is striking with mayonnaise-like foods packed in flexible containers, as opposed to those packed in cans or bottles.

[0004]

Thus, the objective of the present invention is to offer a mayonnaise-like food packed in a container whose flavor immediately after manufacturing can be maintained over a long term.

[0005]

[Means for Resolving Problems]

As a result of the present inventors' assiduous research to achieve the aforementioned objectives, the completion of the present invention was achieved. That is to say, the present invention offers (1) a mayonnaise-like food packaged in a container containing a defatted egg yolk hydrolysate; (2) the mayonnaise-like food packaged in a container of (1), wherein the container is a flexible container; (3) the mayonnaise-like food packaged in a container of (1) or (2), wherein the egg yolk hydrolysate is an acid hydrolysate or a decomposed substance using both acid and enzyme decomposition; and (4) the mayonnaise-like food packaged in a container of any of (1) to (3), wherein the content of the defatted egg yolk hydrolysate is 0.01 – 1% by weight per the entire weight of the mayonnaise-like food, in dry matter conversion.

[0006]

[Embodiment of the Invention]

In the present invention, the mayonnaise-like food refers to a food wherein edible oils and fats, eggs, and vinegar are added, the edible oils and fats are uniformly distributed in an aqueous phase, and are maintained in an emulsified state; the pH is in the range of 3 – 5. In addition to the food ingredients described above, for example, flavorings such as monosodium glutamate, sugar, salt, miso, ketchup, soy sauce, unrefined sake, fermented bean paste, and the like; spices such as animal and plant

extracts, mustard powder, and the like; spicy vegetables such as pickles, herbs, and the like; various types of shellfish materials such as soft-boiled eggs and the like and paste-like substances thereof, and the like, may be added as desired. Representative products are, for example, mayonnaise, salad dressing, tartar sauce, and the like. These mayonnaise-like foods generally contain 35 – 85% oils and fats. As long as the edible oils and fats used in the present invention are used as general mayonnaise-like foods, there is no particular limitation; for example, animal and plant oils such as corn oil, cottonseed oil, safflower oil, olive oil, soybean oil, palm oil, fish oil, and the like, and oils and fats contained by chemically processing these, may be cited.

[0007]

Regarding the eggs added to the mayonnaise-like food of the present invention, egg yolks or whole egg liquids normally added to mayonnaise-like foods may be used, but items that have undergone any type of processing such as being processed with phospholipid-degrading enzymes, proteases, and the like, or items denatured by pressurizing, heating, or the like, may be used. Also, dried articles that have been spray-dried, freeze-dried, or the like, and dried articles that have been rehydrated, may also be used.

[0009]

Regarding the vinegar added to the mayonnaise-like food of the present invention, as long as it is a vinegar normally used in foods, any item may be used; for example, rice vinegar, apple vinegar, wine vinegar, alcohol vinegar, and the like may be cited.

[0010]

For the defatted yolk hydrolysate used in the present invention, the defatted yolk described above may be obtained by hydrolyzing using one method, or a combination of two or more, of an acid (for example, hydrochloric acid, sulfuric acid, nitric acid, acetic acid, and the like), an enzyme (for example, a protease [papain, pancreatin, or the like], an alkali [for example, sodium hydroxide, potassium hydroxide, or the like], or the like. In particular, as shown in the test example described below, results are provided with acid hydrolysate or a decomposed substance using both acid and enzyme decomposition, and these are preferable.

[0011]

It is preferable for the content of the defatted egg yolk hydrolysate to be 0.01 – 1% by weight per the entire weight of the mayonnaise-like food, in dry matter conversion. At less than 0.01% by weight, it is difficult to obtain a flavor deterioration prevention effect, and at greater than 1% by weight, it is difficult to obtain results that correspond to the quantity contained.

[0012]

Representative manufacturing methods for a defatted yolk hydrolysate used in the present invention are explained below, but it is not limited to these methods. First, an example of a manufacturing method of the defatted yolk used in the raw material is explained.

[0013]

A chicken egg is cracked open, and the egg yolk liquid, which is separated from the egg white liquid, is dried using a drying method such as a spray-drying method, a freeze-drying method, or the like (drying is not essential, but the next step of extracting

and removing the egg yolk lipids is facilitated by drying). Then, 5 – 20 parts of alcohol (ethanol concentration of approximately 90 – 99% by volume and a water concentration of approximately 10 – 1% by volume) are caused to act on 1 part of the dried egg yolk, and the egg yolk lipids (mainly triglycerides, cholesterol, and phospholipids) that are soluble in alcohol are extracted. The alcohol fraction containing the egg yolk lipids is removed by a filtration means such as a filter press, compressing filtration, or the like. As necessary, the aforementioned alcohol is caused to act again on the filtering residue, and after extraction and filtration, the filtering residue is dried, and the water and alcohol are evaporated.

[0014]

Next, examples of hydrolysis processing methods are explained.

A. Acid hydrolysis method

To 1 part of a defatted egg yolk, 5 – 40 parts of 0.5 – 6 mol/l of hydrochloric acid, or 0.25 – 7.5 mol/l of sulfuric acid are added, and for example, under normal pressure, this is processed from 30 minutes to 24 hours at 50 – 100°C. After neutralization, it is filtered, and, as necessary, dechlorinated, and an aqueous solution of a defatted yolk is obtained.

[0015]

B. Enzyme decomposition method

To 1 part of a defatted egg yolk, 10 – 40 parts of pure water are added, and a protease, for example, papain, pancreatin, or the like is added to the defatted yolk so as to be 0.5 – 20% by weight. This is processed at an optimum pH and temperature of the

enzyme for 5 – 40 hours, and after the enzyme is deactivated by heating, it is filtered, and a defatted yolk decomposed substance is obtained.

[0016]

C. Alkali hydrolysis method

To 1 part of a defatted egg yolk, 5 – 40 parts of 0.5 – 3 mol/l of hydrochloric acid, or 0.25 – 7.5 mol/l of sodium hydroxide or potassium hydroxide are added, and for example, under normal pressure, this is processed from 30 minutes to 8 hours at 40 – 100°C. After neutralization, it is filtered, and, as necessary, dechlorinated, and an aqueous solution of a defatted yolk is obtained.

[0017]

D. Method using both acid and enzyme decomposition

To 1 part of a defatted egg yolk, 5 – 40 parts of 0.5 – 6 mol/l of hydrochloric acid, or 0.25 – 7.5 mol/l of sulfuric acid are added, and for example, under normal pressure, this is processed from 30 minutes to 24 hours at 50 – 100°C. Then, after being adjusted to an optimum pH of a protease, a protease is added to the dried substance of the defatted yolk to be 0.1 – 20% of the defatted yolk dried substance, and is processed at 5 – 40 hours of the optimum temperature of the enzyme. After the enzyme is deactivated by heating, filtration, and as necessary, dechlorination are carried out, and an aqueous solution of a defatted yolk decomposed substance is obtained.

[0018]

The aqueous solution of a defatted yolk decomposed substance obtained by the various hydrolysis methods may be used as a dried substance with a drying method such as spray-drying or freeze-drying.

[0019]

Because the defatted yolk hydrolysate obtained by the methods described above is contained in the mayonnaise-like food, it is a preferable product wherein the flavor immediately after first being manufactured is maintained over a long term.

[0020]

Various food ingredients other than those described above may be suitably selected and added to the mayonnaise-like food packaged in a container of the present invention, to the extent that the results of the present invention are not lost. For example, thickeners such as xanthan gum, locust bean gum, gellan gum, tamarind seed gum, starches, chemically modified starches, and the like; surfactants such as sucrose fatty acid esters, sorbitan fatty acid esters, polyglycerine fatty acid esters, phospholipids, lysophospholipids, and the like may be cited.

[0021]

Regarding the container, there is no particular limitation as long as it can be used for a mayonnaise-like food. However, because flexible containers, wherein there is a tendency for the flavor to deteriorate more quickly than in cans or bottles, have usage advantages, they are generally used. For the materials of the flexible containers, one, or a combination of two or more thermoplastic materials such as polyethylene, polypropylene, ethylene-vinyl acetate, ethylene-vinyl alcohol copolymers, polyethylene terephthalate, and the like may be used. These may be formed into a hollow item, or a hollow item comprised of two or more laminated layers of these thermoplastic materials may be used.

[0022]

Next, the present invention is explained in more detail based on embodiments and test examples.

[0023]

[Embodiments] [Embodiment 1]

a. Manufacture of a defatted yolk

Chicken eggs were cracked open and 10 kg of egg yolk liquid, which were separated from the egg white liquid and obtained, had their water removed by spray-drying, and 4.8 kg of dried egg yolk were obtained. 20 l of ethanol, in 95% by volume, were added to the dried egg yolk, and after stirring for 30 minutes at 30°C, the alcohol fraction containing yolk lipids was removed by filtration. Then, after washing with 2 l of ethanol, in 95% by volume, this was filtered, and the yolk lipids in the residue were removed. Next, the ethanol was removed at 50°C with the filtered residue under reduced pressure, and 1.7 kg of yolk lipids were obtained. The defatted yolk contained about 15% by weight of yolk lipids.

[0024]

B. Manufacture of defatted yolk hydrolysate

10 l of a hydrochloric acid solution, at 2 mol/l, were added to 1 kg of the defatted yolk obtained by the method described above. This was processed at 90°C for 3 hours. Next, after being neutralized by 4 mol/l of a sodium hydroxide aqueous solution, this was filtered and dechlorinated by electrodialysis. The obtained solution was spray-dried, and a defatted yolk hydrolysate was obtained.

[0025]

C. Manufacture of a mayonnaise-like food packaged in a container

After 0.5 kg of the defatted yolk hydrolysate obtained by the method described above, 14 kg of whole egg liquid, 4.5 kg of vinegar (13% by weight of acidity), 2 kg of pure water, 1.8 kg of table salt, and 1.7 kg of superfine sugar were made uniform in a blender, 75.5 kg of salad oil were gradually added, and while being degassed, they were roughly emulsified. This rough emulsified product was immediately passed into and finished in a colloid mill, and emulsification was carried out. Next, 140 g at a time of the emulsified product (mayonnaise-like food) was filled into a 150-g capacity tube, and after the head space was replaced with nitrogen, it was sealed, and a mayonnaise-like food packaged in a container was obtained.

[0026]

[Embodiment 2]

10 l of a sodium hydroxide aqueous solution at 2 mol/l were added to 1 kg of the defatted yolk of Embodiment 1. This was processed at 70°C for 3 hours. Then, after being neutralized in a hydrochloric acid solution at 3 mol/l, this was filtered and dechlorinated by electrodialysis. The obtained solution was spray-dried and a defatted yolk alkali hydrolysate was obtained. Using this defatted yolk alkali hydrolysate, a mayonnaise-like food packaged in a container was obtained by the same manufacturing method for a mayonnaise-like food packaged in a container of embodiment 1.

[0027]

[Embodiment 3]

A. Manufacture of a defatted yolk

Chicken eggs were cracked open and 10 kg of egg yolk liquid, which were separated from the egg white liquid and obtained, had their water removed by spray-

drying, and 4.8 kg of dried egg yolk were obtained. 20 l of ethanol, in 95% by volume, were added to the dried egg yolk, and after stirring for 30 minutes at 30°C, the alcohol fraction containing yolk lipids was removed by filtration. Then, the filtered residue was washed twice with 2 l of ethanol at 98% by volume, and the yolk lipids in the residue were removed. Next, the ethanol was removed at 50°C with the filtered residue under reduced pressure, and 1.5 kg of yolk lipids were obtained. The defatted yolk contained about 4% by weight of yolk lipids.

[0028]

B. Manufacture of defatted yolk hydrolysate

15 l of a hydrochloric acid solution, at 5 mol/l, were added to 1 kg of the defatted yolk obtained by the method described above. This was processed at 90°C for 2 hours. Next, after adjusting to a pH of 6.0 by a sodium hydroxide aqueous solution at 4 mol/l, 20 g of a protease (Refined Papain for Foods, product name, manufactured by Nagase Biochemical Industrial Co., Ltd.) were added and processed at 50°C for 6 hours. Then, this enzyme-processed liquid was heated and processed at 90°C for 30 minutes. The enzyme was deactivated, and after decoloring by 2 kg of active coal, this was filtered. The obtained aqueous solution was dechlorinated by electrodialysis and was freeze-dried, and a decomposed product using both acid and enzyme decomposition of defatted yolk was obtained.

[0029]

C. Manufacture of a mayonnaise-like food packaged in a container

Using the defatted yolk hydrolysate obtained by the method described above, a mayonnaise-like food packaged in a container was obtained using the same

manufacturing method for a mayonnaise-like food packaged in a container of

Embodiment 1.

[0030]

[Test Examples]

[Test Example 1]

The mayonnaise-like food packaged in a container obtained from Embodiments 1 to 3 described above were preserved under promotion conditions of 35°C, under protection from light, the preserved product and a newly manufactured product were tested. Changes in the flavor were evaluated once a week. The reference product in the tables was manufactured without containing a defatted yolk hydrolysate.

[0031]

[Table 1]

[Table Headings: Preserved time, in weeks / Reference product / Embodiment 1 (acid decomposition) / Embodiment 2 (alkali decomposition) / embodiment 3 (acid and enzyme decomposition)]

保存期間 [W]	対照品	実施例1 (酸分解)	実施例2 (アルカリ分解)	実施例3 (酸と酵素併用)
0	—	—	—	—
1	—	—	—	—
2	—	—	—	—
3	—	—	—	—
4	—	—	—	—
5	±	—	—	—
6	±	—	—	—
7	+	—	±	—
8	+	—	±	—
9	++	±	+	±
10	++	+	+	+

[0032]

Note: Symbols in table

-: No change, or very slight deterioration of flavor, to the extent that there are no problems

±: Slight deterioration of flavor

+: Deterioration of flavor

++: Marked deterioration of flavor

[0033]

From Table 1, it can be understood that the item containing a defatted yolk hydrolysate maintains the flavor immediately after manufacture over a long term. In particular, it can be understood that items using acid decomposition or acid and enzyme decomposition particularly maintain their flavor immediately after manufacture over a long term.

[0034]

Other than the fact that the content of the defatted yolk hydrolysate was changed to the quantities (dry material calculation) shown in Table 2, the mayonnaise-like food packaged in a container was manufactured using the same method, and the respective mayonnaise-like foods packaged in a container were evaluated with the same method as in Test Example 1.

[0035]

[Table 2]

[Table Headings: Preservation time (weeks) / Content of defatted yolk hydrolysate]

保存期間 [W]	脱脂卵黄の加水分解物の含有量					
	0 %	0.005 %	0.01 %	0.1 %	1 %	1.5 %
0	-	-	-	-	-	-
1	-	-	-	-	-	-
2	-	-	-	-	-	-
3	-	-	-	-	-	-
4	-	-	-	-	-	-
5	±	-	-	-	-	.
6	±	±	-	-	-	.
7	±	±	-	-	-	.
8	±	+	±	±	-	-
9	++	+	+	+	±	±
10	++	++	++	+	+	+

[0036]

From Table 2, it can be understood that at least 0.01% by weight of a defatted yolk hydrolysate is preferable for maintaining the flavor immediately after manufacture over a long term, and that if 1% or more is contained, it is difficult to obtain results that correspond to the quantity contained.

[0037]

As has been explained above, with the mayonnaise-like food packaged in a container of the present invention, the flavor immediately after manufacture can be maintained over a long term, so it is expected that the demand for mayonnaise-like foods packaged in a container will increase.

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